

REMARKS

Claims 21, 25-32 and 35-39 are pending in this application. By this Amendment, the Abstract is amended. No new matter is added. Reconsideration of this application is respectfully requested.

I. Preliminary Matters

The Office Action states that four documents submitted in an Information Disclosure Statement (IDS) filed June 3, 2005 have not been considered because the references were written in Japanese.

As requested by the Office Action, translations of references 5 and 7-9 of the June 3, 2005 IDS are attached to this Amendment. However, it is noted that MPEP §609.04(a)(III) does not require translations of references 5 and 7-9 because the references were cited in an English language PCT search report that was included with the June 3, 2005 IDS. As stated at MPEP 609.04(a) III, pages 600-153 to 154:

Where the information listed is not in the English language, but was cited in a search report or other action by a foreign patent office in a counterpart foreign application, the requirement for a concise explanation of relevance can be satisfied by submitting an English-language version of the search report or action which indicates the degree of relevance found by the foreign office.

Therefore, references 5 and 7-9 should have been considered even without the attached translations.

A copy of the PTO-1449 filed with the June 3, 2005 IDS is attached, and the Examiner is requested to initial references 5 and 7-9.

II. Objection to the Abstract

The Office Action objects to the Abstract for reasons addressed in the Office Action. The Abstract is amended, thereby obviating the rejection.

Withdrawal of the objection to the Abstract is respectfully requested.

III. Rejection of the Claims

The Office Action rejects claims 21, 25-32 and 35-39 under 35 U.S.C. §103(a) over U.S. Patent No. 6,687,447 to Flory et al. (Flory). This rejection is respectfully traversed.

Independent claim 21 recites a two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection that includes, among other features, plural modified refractive index areas arranged periodically in a slab-shaped body, a waveguide formed by creating defects of the modified refractive index areas in a linear arrangement the end of which is located on an end of the body, and a first reflecting section provided at an end of the waveguide, for reflecting light having a wavelength equal to a resonant wavelength of a point-like defect by connecting another two-dimensional photonic crystal not transmitting light with the wavelength to the end of the body.

Independent claim 31 recites a two-dimensional photonic crystal optical multiplexer/demultiplexer using boundary reflection similar to the multiplexer/demultiplexer recited in claim 21 in which a part of a waveguide-transmittable wavelength band in each of the forbidden band zones is not included in a waveguide-transmittable wavelength band of all forbidden band zones present on one side of the forbidden band zone, but included in the waveguide-transmittable wavelength band of all forbidden band zones present on the other side of the forbidden band zone.

With respect to independent claim 21, the Office Action acknowledges that Flory does not teach a photonic crystal device that is further connected to another photonic crystal device, and with respect to claim 31, the Office Action acknowledges that Flory does not explicitly teach a plurality of forbidden band zones with particular waveguide transmittable band being present and at a resonant wavelength. However, the Office Action asserts that one of ordinary skill in the art at the time the invention was made would have recognized such features as obvious design choices. This is incorrect.

The Office Action has mischaracterized the features recited in the claims. For example, with respect to claim 21, nowhere does Flory teach or suggest (1) a two-dimensional photonic crystal that includes a reflecting section provided at an end of the waveguide; (2) a reflecting section that reflects light having a wavelength equal to the resonant wavelength of a point-like defect in the two-dimensional photonic crystal; or (3) a reflecting section that is established by connecting a second two-dimensional photonic crystal at the end of the waveguide of a first two-dimensional photonic crystal, as recited in claim 21. Such features cannot reasonably be considered mere design choices, as asserted by the Office Action, and denied patentable weight.

Further, with respect to claim 31, nowhere does Flory teach or suggest (1) a part of a waveguide-transmittable wavelength band in each of the forbidden band zone is not included in a waveguide-transmittable wavelength band of all forbidden band zones present on one side of the forbidden band zone; (2) but that the same part of a waveguide-transmittable wavelength band is included in the waveguide-transmittable wavelength band of all forbidden band zones present on the other side of the forbidden band zone; and (3) that the resonant wavelength of the point-like defect created in each of the forbidden band zones is included in the waveguide-transmittable wavelength band of the respective forbidden band zones. Such features cannot reasonably be considered mere design choices, as asserted by the Office Action, and denied patentable weight.

For example, as described in the original specification at page 23, line 16 through page 24, line 14, use of reflective sections improves the efficiency of each two-dimensional photonic crystal optical multiplexer/demultiplexer by reflecting light, associated with the resonant wavelength of the point-like defect of the device that would otherwise be lost, back within the two-dimensional photonic crystal optical multiplexer/demultiplexer. For example, in a multiplexing operation, use of the claimed reflective surface allows more light input at

the point-like defect to reach the takeout point. In a demultiplexing operation, the claimed reflective surface allows more light input at the input point to reach point-like defect takeout point. Thus in both operations efficiency is improved.

For at least these reasons, Flory cannot reasonably be considered to teach or to have suggested the combination of all of the features positively recited in independent claims 21 and 31. Claims 25-30 and 32-39 depend from claims 21 and 31 and, therefore, Flory cannot reasonably be considered to teach or to have suggested the combinations of features recited in claims 25-30 and 32-39 for the same reasons addressed with respect to claims 21 and 31, above, as well as the additional features that each of claims 25-30 and 32-39 recites.

Accordingly, reconsideration and withdrawal of the rejection of claims 21, 25-32 and 35-39 under 35 U.S.C. §103(a) over Flory are respectfully requested.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 21, 25-32 and 35-39 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:

Amended Abstract (1 Sheet)
Translations (4 Sheets)
PTO-1449 from June 3, 2005 IDS

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